

Name Dai Huang
Notebook Number 728-3
Subject Raw Coke Project
Dates From _____ To _____

THIS BOOK IS THE PROPERTY OF
UCAR Carbon Company Inc.
12900 Snow Road
Parma Ohio 44130

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Subject

Cross-Reference (if any)

Raw Coke Campaign (I)

• Raw Materials

Raw coke: unocal ~3um (T3349-B, run 5)

mobil ~3um (T3349-A, run 5)

Mesophase coke: KMFC, MPC-1

additives

T-mix powder: fine portion of 2um filler, 20um molding powder

PC coke: 2um filler

• Mixing:

Equipment: Lancaster K-Lab mixer

Sample IDComposition (weight %)

U3K20

80% unocal 3um + 20% KMFC

U3M20

80% unocal 3um + 20% MPC-1

U3T20

80% unocal 3um + 20% F-Tmix

U3P20

80% unocal 3um + 20% PC coke

m3K20

80% mobil 3um + 20% KMFC

m3M20

80% mobil 3um + 20% ~~PC~~ MPC-1

m3T20

80% mobil 3um + 20% T-Tmix

m3P20

80% mobil 3um + 20% PC coke

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Mixing Procedures

Mix Formulation:

	weight (g)
Raw Coke	1,400 2,400
Additive	400 600
Total	2,100 3,000

y powder

Mixing:

1. Raise the lid, Head "up". Charge the Pan with raw coke only;
2. Lower the lid, Head "down", Fram "down"
3. Rotor & Pan on, set rotor and pan at 90/90. Begin addition of additive through funnel.
4. After additive addition complete, turn rotor and pan off. Remove funnel and put the plug back.
5. Frame "up" until the pan is fully tilted.
6. Rotor and pan on with 90/90 settings. Mix intensively for 2 minutes
7. Rotor and pan off, Fram "down", Head "up", unload the mix
8. Weigh the mix.

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Molding

1. Put the mix into ~~28" x 28"~~ ^{24" x 24"} bag. Jolt the bag.
7" x 8"
2. CIP at 20,000 psi
3. ~~Weight the~~ Measure the dimension, weight, density

Baking

Fast baking schedule:

RT \rightarrow 500°C	15°C/hr	33 hrs
500°C \rightarrow 1000°C	2.5°C/hr	200 hrs
1000°C	hold 4 hrs	4 hrs
1000°C \rightarrow 600°C	5°C/hr	80 hrs
		<hr/>
		13.21 days

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The new idea of making Carbon foam with ~~at~~ natural graphite flake as the additive. — foaming agent.

Precursors: pitch base (isotropic or mesophase)
resins — phenolic or furfuryl alcohol
thermoplastic plastics

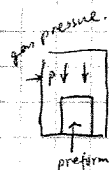
mill these precursors into powders, with the size range from 50-200 mesh

Additive: treated natural graphite flakes.
these flakes can be in the powder forms with the size range of 50-200 mesh.

Mix these precursors and additive in the mixer; with the ratio of precursor (10-90%) and additive (10-90%).

two different subsequent processes.

i) — Charge the mix into a mold which is isomolded to form a preform.



— Put the preform in the pressure vessel, pull vacuum, then apply the gas pressure range (500 psi — 1000 psi), in the same time to heat the vessel at ~~the~~ heating rate. (10-50°C/hr) ^{different} for 1-5 hrs; Final temp. @ 800~1000°C.



ii) — Charge the mix into a mold which will be transferred under a pressure in the same time pass the current through to ^{the applied pressure can be around 500~1000 psi.} heat the mold (10-50°C/hr) to 800°C~1000°C. For 1-5 hrs.

Then the billets will go through oxidation process if necessary, and graphitization to make final carbon or graphite foam product.

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Sound Absorption

4" ϕ x 1"4" ϕ x 2"

Standard:

- fiberglass
- Acoustic Tile.

220 Flake 88% SO_2
 12% H_2O
 20% weight

3-28-2001

- E-room
- technology alliance presentation (A.D. Little) in the share drive.
- April-12. Nanotube talk.
 carbon blacks.
- New method of making
- degree of communications with Graftech.
 meet with Graftech once a quarter.
- I.P.
 - Notebook
 - e-mail

Next Meeting: April 20.

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First C/C trial at Lawrenceburg (BP process)

Raw materials: 1. MC 1/4" fiber bundles. ~~15%~~

2. Standard binder pitch ~~15%~~

Composition: Exp. 1: 85% fiber
15% pitch (with sulfur addition)

Exp. 2: 80% fiber
20% pitch (with S addition)

Process: • Dry mix fiber + pitch.

• BP process: 13" x 9" x 4 1/2"

Quantity: Each experiment make 2 bricks.

SR is low, might consider to add Sand (1%?).

2nd C/C trial at Lawrenceburg (BP process)

Raw materials: 1. MC 1/4" fiber bundle.

b. Anoco 1 1/2" fiber with PVC sizing.

2. Anoco neoprene pitch.

Composition: Exp. 1: 85% fiber
15% pitch (no sulfur)

Exp. 2: 75% fiber
25% pitch (no sulfur).

Fiber		
Composition	MC + pitch	Anoco + pitch
85/15	2	1
75/25	2	1

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3322

Trial 1. 15% pitch
83% C. Fibers

1800-945-3208

Trial 2. 15% pitch
5% Sand
80% C. Fiber.

15%, 83%

NMG

— sandless

NMD

half power

gms.

firing schedule

(slower schedule, lower power input)

NMA pressure

water spray

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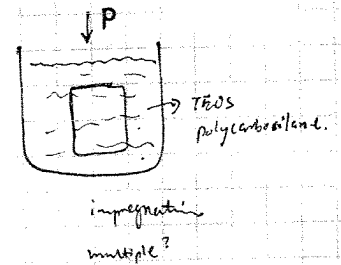
Issues / directions:

- Zetek preform impregnation
- SiO_2 and SiC , TEOS coating (conversion temp. & energy, etc.)
TEOS solution poly carbosilane, etc. impregnate.
- different graphitization temperature

www.fortafil.com.

- pressure baking.
- CVI

• FM



ASG group meeting

6/08/01

- Rigid Insulation. { isotropic fiber
sugar binder. } Clarksburg
- Grafoil sheet for EMI application (cell phone, laptop computer).
- 50%, 75% of ACM graphite powder. (thermally conductive polymer).

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